

- 50B
71
(cont'd)
- (b) either
- (i) a gene encoding a repressor protein under control of said inducible promoter; or
- (ii) a gene encoding an inhibitor of the disrupter gene specified at (d) below under control of said inducible promoter;
- (c) a plant developmental gene promoter sequence activated at a selected stage of plant development, which, in the case of (b)(i) above, includes an operator sequence recognized by said repressor protein, the presence of which inactivates said plant developmental gene promoter;
- (d) a gene encoding a protein-disrupter of a plant-characteristic, wherein said plant characteristic is either essential to plant growth or is a desired characteristic resulting from gene insertion, under the control of said plant developmental gene promoter sequence; wherein the presence or absence of the exogenous chemical inducer controls whether said characteristic is displayed in the plant,
- wherein said system does not act only to disrupt the biosynthesis of viable pollen.

27. An expression system as claimed in claim 26 where the plant characteristic controlled by the system is essential to plant growth, whereby the presence or absence of the exogenous chemical inducer allows either growth to maturity or causes growth to slow down or stop at said selected stage.

28. An expression system as claimed in claim 26 or claim 27 wherein said inducible promoter sequence is functionally linked to and controls a repressor protein gene and in

SUB 4
D cont'd

which the disrupter gene promoter includes an operator sequence recognized by said repressor protein, so that in the presence of the inducer the repressor protein is produced which interacts with the operator sequence disabling the plant developmental gene promoter and inhibiting expression of the disrupter gene.

SUB 1
C2

29. An expression system as claimed in claim 26, wherein the disrupter gene encodes a cytotoxin which disrupts cell function, leading to cell death.

SUB 1
C1 CANCELED

30. An expression system as claimed in any one of claims 26 or 27, wherein the disrupter gene encodes a recombinase adapted to excise a nucleotide sequence flanked by recombinase recognition sequences.

SUB 1
C3

31. An expression system as claimed in any one of claims 26 or 27, wherein the disrupter gene encodes a nucleotide sequence adapted to inhibit an endogenous plant gene which is essential to plant development or an inserted gene conferring a desired characteristic on the plant.

32. An expression system as claimed in claim 31, wherein said nucleotide sequence is in antisense orientation to the gene to be inhibited and corresponds to less than the full length of said gene to be inhibited.

33. An expression system as claimed in claim 31 in which the gene to be inhibited is an endogenous plant gene essential to seed germination or early seedling development.

[CANCELLED]
34. An expression system as claimed in claim 33, wherein the gene to be inhibited or excised is an α -amylase gene.

SUB 04
35. An expression system as claimed in claim 26 in which said plant development promoter sequence is the promoter of a gene normally active during germination or early seedling development.

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36. An expression system as claimed in claim 35, wherein said promoter is the promoter of the malate synthase gene.

37. An expression system as claimed in claim 35, wherein said promoter is the promoter of the germin gene.

SUB 05
38. An expression system as claimed in claim 35, wherein said promoter is selected from the group consisting of the gene promoters of glyoxysomal enzyme genes, aleurone layer genes and carboxypeptidase genes.

39. An expression system as claimed in claim 30, in which the recombinase gene is the FLP gene of the 2 micron plasmid of *Saccharomyces cerevisiae* and the recognition sequences are the FRT sequences which flank all or part of an inserted gene or its regulatory elements.

SUB
C5 (contd)

40. An expression system as claimed in claim 30, wherein the recombinase gene is the Cre gene of bacteriophage P1 and its recognition sequence or the lox sequences which flank all or part of an inserted gene or its regulatory elements.

SUB
D2

41. An expression system as claimed in claim 30, wherein the recombinase gene is the Activator transposase of Zea mays.

42. An expression system as claimed in claim 26, wherein the inducible promoter is the promoter of the gene encoding the 27 kd protein of glutathione-S-transferase II.

43. An expression system as claimed in claims 26, wherein said inducible promoter comprises the promoter of the AlcA gene, the system further comprising a gene capable of expressing the AlcR protein alcA and alcR being obtainable from Aspergillus.

SUB
Dle

44. An expression system as claimed in claim 26 which comprises a repressor protein gene, wherein said repressor protein gene encodes the Iacc repressor or a repressor used by 434, P22 or lambdabacteriophages.

45. An expression system as claimed in claim 26, which comprises a repressor protein gene, wherein said repressor protein is the tet repressor.

SUB
C16
46. An expression system as claimed in claim 26, wherein the disrupter gene encodes bamase and the gene encoding the inhibitor of the disrupter gene contains the coding region of the barstar gene which on expression produces a protein inhibitor of bamase.

47. A recombinant plant genome comprising an expression system as claimed in claim 26.

48. A plant having a recombinant genome as claimed in claim 47.

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49. A plant part having a recombinant genome as claimed in claim 47.

50. A plant cell having a recombinant genome as claimed in claim 47.

51. Protected plant germplasm comprising a plant engineered to comprise the gene of claim 26 comprising a gene capable of inhibiting development of the plant beyond a selected development stage, wherein application of the exogenous chemical inducer to the plant overcomes the inhibitory effect of the development inhibiting gene.

SUB
D9
52. A plant or seed engineered to comprise the expression system of claim 26, which is incapable of growing to maturity comprising a genome which includes a genetic inhibitor of seed germination or plant development, the activity of said inhibitor being regulatable by application of said exogenous chemical inducer.--